

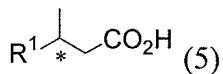
Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

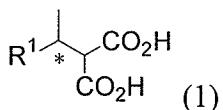
1.-6. (Canceled)

7. (Currently Amended) A method for producing (R)- or (S)-3-methyl carboxylic acid represented by the following formula (5):



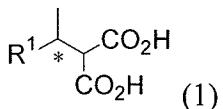
wherein R¹ represents an alkyl group containing 3 to 5 carbon atoms, and * represents an asymmetric carbon,

which comprises decarboxylating (R)- or (S)-1-methylalkyl malonic acid having optical activity represented by the following formula (1), obtained by the method according to claim 8, in the presence of a highly polar solvent and/or an additive for promoting decarboxylation:



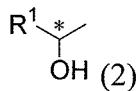
wherein R¹ has the same definition as described above, and * represents an asymmetric carbon.

8. (Original) A method for producing (R)- or (S)-1-methylalkyl malonic acid represented by the following formula (1):

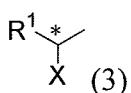


wherein R¹ represents an alkyl group containing 3 to 5 carbon atoms, and * represents an asymmetric carbon,

which comprises allowing optically active alcohol represented by the following formula (2) to react with a sulfonylation agent:

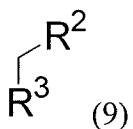


wherein R¹ has the same definition as described above, and * represents an asymmetric carbon, so as to obtain an optically active compound represented by the following formula (3):

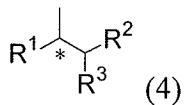


wherein R¹ has the same definition as described above, X represents a sulfonyloxy group, and * represents an asymmetric carbon;

allowing the optically active compound to react with a carbon nucleophile represented by the following formula (9) in the presence of a base:



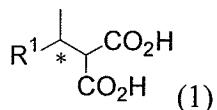
wherein each of R² and R³ independently represents an ester group, a carboxyl group, or a cyano group, wherein R² and R³ may together form a cyclic structure, so as to obtain an optically active compound represented by the following formula (4):



wherein R¹, R², and R³ have the same definitions as described above, and * represents an asymmetric carbon, and

hydrolyzing the obtained optically active compound.

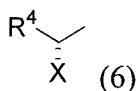
9. (Currently Amended) (R)-1-methylalkyl malonic acid or (S)-1-methylalkyl malonic acid having an optical purity of 90% ee e.e. or greater, which is represented by the following formula (1):



wherein R¹ represents an alkyl group containing 3 to 5 carbon atoms, and * represents an asymmetric carbon.

10. (Original) The (R)-1-methylalkyl malonic acid or (S)-1-methylalkyl malonic acid according to claim 9, wherein R¹ represents an n-propyl group or an n-butyl group.

11. (Currently Amended) A The method for producing an according to claim 14, wherein the optically active substance represented by the following formula (6):



wherein R⁴ represents an n-propyl group or an n-butyl group, and X represents a sulfonyloxy group,

is prepared by a method which comprises: allowing microorganisms or transformed cells containing a carbonyl reductase having activity to react with 2-pentanone to generate (S)-2-pentanol, wherein it is able to generate (S)-2-pentanol having an optical purity of 95% e.e. or greater when the fresh cell mass thereof, which has not been pretreated with a solvent, is allowed to act on 2-pentanone, and the productivity thereof is 10 mg or more of (S)-2-pentanol/g of dry cell mass weight/hour, a product obtained by treating said microorganisms or cells, a culture solution of said microorganisms or cells, and/or a crude purified product or purified product of a carbonyl reductase fraction obtained from said microorganisms or cells, or allowing microorganisms or transformed cells containing a carbonyl reductase having activity to react

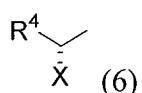
with 2-hexanone to generate (S)-2-hexanol, wherein it is able to generate (S)-2-hexanol having an optical purity of 95% e.e. or greater when the fresh cell mass thereof, which has not been pretreated with a solvent, is allowed to act on 2-hexanone, and the productivity thereof is 10 mg or more of (S)-2-hexanol/g of dry cell mass weight/hour, a product obtained by treating said microorganisms or cells, a culture solution of said microorganisms or cells, and/or a crude purified product or purified product of a carbonyl reductase fraction obtained from said microorganisms or cells

to act on 2-pentanone or 2-hexanone, so as to convert it to (S)-2-pentanol or (S)-2-hexanol; and allowing the obtained (S)-2-pentanol or (S)-2-hexanol to react with a sulfonylation agent, so as to convert it to the optically active substance represented by the above formula (6).

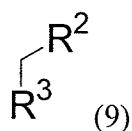
12. – 13. (Canceled)

14. (Currently Amended) A method for producing (R)-1-methylbutyl malonic acid or (R)-1-methylpentyl malonic acid, which comprises:

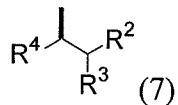
allowing the optically active substance represented by formula (6):



wherein R^4 represents an n-propyl group or an n-butyl group, and X represents a sulfonyloxy group, obtained by the method according to claim 11 to react with a carbon nucleophile represented by the following formula (9) in the presence of a base:

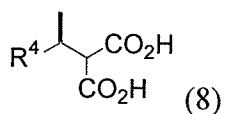


wherein each of R^2 and R^3 independently represents an ester group, a carboxyl group, or a cyano group, wherein R^2 and R^3 may together form a cyclic structure, so as to convert it to an optically active compound represented by the following formula (7):



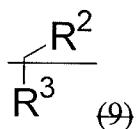
wherein R² and R³ have the same definitions as described above, and R⁴ represents an n-propyl group or an n-butyl group, and

hydrolyzing the obtained optically active compound, so as to convert it to (R)-1-methylbutyl malonic acid or (R)-1-methylpentyl malonic acid represented by the following formula (8):

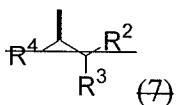


wherein R⁴ has the same definition as described above.

15. (Currently Amended) A method for producing (R)-3-methyl hexanoic acid or (R)-3-methyl heptanoic acid, which comprises allowing the optically active substance represented by formula (6) obtained by the method according to claim 11 to react with a carbon nucleophile represented by the following formula (9) in the presence of a base:

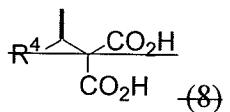


wherein each of R² and R³ independently represents an ester group, a carboxyl group, or a cyano group, wherein R² and R³ may together form a cyclic structure, so as to convert it to an optically active compound represented by the following formula (7):



wherein R² and R³ have the same definitions as described above, and R⁴ represents an n-propyl group or an n-butyl group;

hydrolyzing the obtained optically active compound, so as to convert it to (R)-1-methylbutyl malonic acid or (R)-1-methylpentyl malonic acid represented by the following formula (8):



wherein R⁴ has the same definition as described above, and

decarboxylating the obtained (R)-1-methylbutyl malonic acid or (R)-1-methylpentyl malonic acid obtained according to the method of claim 14.

16.-19. (Canceled)